Cisco UCS C240 M3 Rack Server

Product Overview

The form-factor-agnostic Cisco® Unified Computing System™ (Cisco UCS™) combines Cisco UCS C-Series Rack Servers and B-Series Blade Servers with networking and storage access in a single converged system that simplifies management and delivers greater cost efficiency and agility with increased visibility and control. The latest expansion of the Cisco UCS portfolio includes the new Cisco UCS C240 M3 Rack Server (two rack units [2RU]) and Cisco UCS C220 M3 Rack Server (1RU) and the Cisco UCS B200 M3 Blade Server. These three new servers increase compute density through more cores and cache balanced with more memory capacity and disk drives and faster I/O. Together these server improvements and complementary Cisco UCS advancements deliver the combination of features and cost efficiency required to support IT's diverse server needs.

The Cisco UCS C240 M3 Rack Server (Figure 1) is designed for both performance and expandability over a wide range of storage-intensive infrastructure workloads, from big data to collaboration. Building on the success of the Cisco UCS C210 M2 Rack Server, the enterprise-class Cisco UCS C240 M3 server further extends the capabilities of the Cisco UCS portfolio in a 2RU form factor with the addition of the Intel® Xeon® processor E5-2600 and E5-2600 v2 product families, which deliver an outstanding combination of performance, flexibility, and efficiency gains. The Cisco UCS C240 M3 offers up to two Intel® Xeon® processor E5-2600 or E5-2600 v2 processors, 24 DIMM slots, 24 disk drives, and four 1 Gigabit Ethernet LAN-on-motherboard (LOM) ports to provide exceptional levels of internal memory and storage expandability and exceptional performance.

The Cisco UCS C240 M3 interfaces with Cisco UCS using another Cisco innovation, the Cisco UCS Virtual Interface Card. The Cisco UCS Virtual Interface Card is a virtualization-optimized Fibre Channel over Ethernet (FCoE) PCI Express (PCIe) 2.0 x8 10-Gbps adapter designed for use with Cisco UCS C-Series Rack Servers. The VIC is a dual-port 10 Gigabit Ethernet PCIe adapter that can support up to 256 PCIe standards-compliant virtual interfaces, which can be dynamically configured so that both their interface type (network interface card [NIC] or host bus adapter [HBA]) and identity (MAC address and worldwide name [WWN]) are established using just-in-time provisioning. In addition, the Cisco UCS VIC 1225 can support network interface virtualization and Cisco® Data Center Virtual Machine Fabric Extender (VM-FEX) technology.

Figure 1. Cisco UCS C240 M3 Server

Applications

Not all storage-intensive workloads are alike, and the Cisco UCS C240 M3 server's disk configuration delivers balanced performance and expandability to best meet individual workload requirements. With up to 12 LFF (Large Form Factor) or 24 SFF (Small Form Factor) internal drives, the Cisco UCS C240 M3 optionally offers 10,000-RPM and 15,000-RPM SAS drives to deliver a high number of I/O operations per second for transactional workloads

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such as database management systems. In addition, high-capacity SATA drives provide an economical, large-capacity solution. Superfast SSDs are a third option for workloads that demand extremely fast access to smaller amounts of data. A choice of RAID controller options also helps increase disk performance and reliability.

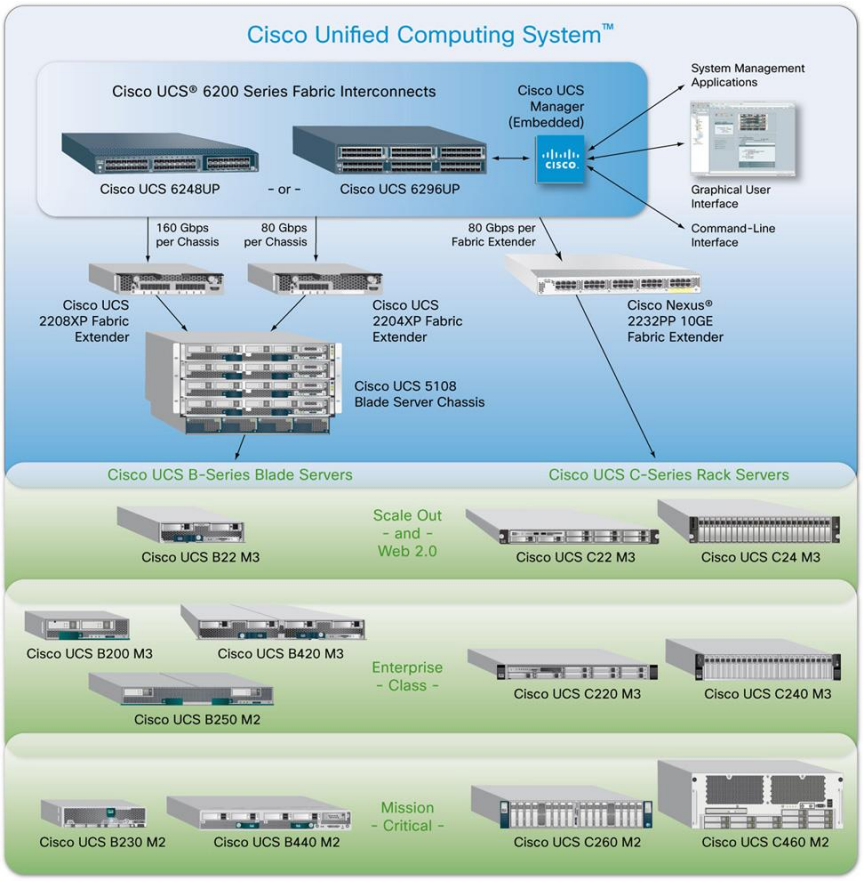
The Cisco UCS C240 M3 further increases performance and customer choice over many types of storage-intensive applications such as:

- Collaboration
- Small and medium-sized business (SMB) databases
- Big data infrastructure
- Virtualization and consolidation
- Storage servers
- High-performance appliances

Cisco UCS Servers Change the Economics of the Data Center

IT infrastructure matters now more than ever, as organizations seek to achieve the full potential of infrastructure as a service (IaaS), bare metal, virtualized servers, and cloud computing. Cisco continues to lead in data center innovation with the introduction of new building blocks for Cisco Unified Computing System that extend its exceptional simplicity, agility, and efficiency (Figure 2) - Innovations such as the Cisco UCS C240 M3 rack server.

Figure 2. Cisco UCS Components


Cisco Unified Computing System™
Cisco UCS® 6200 Series Fabric Interconnects
Cisco UCS Manager (Embedded)
System Management Applications
Cisco UCS 6248UP
- or -
Cisco UCS 6296UP
Graphical User Interface
Command-Line Interface
160 Gbps per Chassis
80 Gbps per Chassis
80 Gbps per Fabric Extender
Cisco UCS 2208XP Fabric Extender
Cisco UCS 2204XP Fabric Extender
Cisco Nexus® 2232PP 10GE Fabric Extender
Cisco UCS 5108 Blade Server Chassis
Cisco UCS B-Series Blade Servers
Cisco UCS C-Series Rack Servers
Cisco UCS B22 M3
Scale Out - and - Web 2.0
Cisco UCS C22 M3
Cisco UCS C24 M3
Cisco UCS B200 M3
Cisco UCS B420 M3
Cisco UCS B250 M2
Enterprise - Class -
Cisco UCS C220 M3
Cisco UCS C240 M3
Cisco UCS B230 M2
Cisco UCS B440 M2
Mission - Critical -
Cisco UCS C260 M2
Cisco UCS C460 M2

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Cisco innovations, such as Cisco UCS Manager, allows administrators to create a software definition for a desired server (using Cisco service profiles and templates) and then instantiate that server and its I/O connectivity by associating a service profile with physical resources. This approach contrasts with the traditional method of configuring each system resource manually, one at a time, through individual element managers. Unlike with the products of other vendors, Cisco service profiles can be moved from rack server to rack or blade server, or between blade or rack servers in different chassis. In other words, Cisco UCS Manager and service profiles are form-factor agnostic.

Other Cisco UCS building blocks include enhanced server I/O options and expanded Cisco UCS fabric interconnects that extend scalability and management simplicity for both blade and rack systems across bare-metal, virtualized, and cloud-computing environments. Cisco helps ensure that nearly all parts of Cisco UCS offer investment protection and are backward compatible. For example, fabric extenders can be upgraded using the same fabric interconnects and same Cisco UCS VIC 1225. Fabric interconnect hardware can be upgraded independently of fabric extenders and blade chassis. Cisco continues to innovate in all these areas, helping ensure that both now and in the future, more powerful, rack servers with larger, faster memory have adequate I/O bandwidth and computing power. Cisco completes this vision through continuous innovation in VIC, ASIC, fabric extender, fabric interconnect, blade server, blade chassis, rack server technologies and form-factor-agnostic Cisco UCS Manager software that ties all these ever-advancing hardware pieces together.

The Cisco UCS C240 M3 is also part of a large family of rack servers: the Cisco C-Series Rack Servers. Designed to operate both in standalone environments and as part of Cisco UCS, the Cisco UCS C-Series servers employ Cisco technology to help customers handle the most challenging workloads. The Cisco UCS C-Series complements a standards-based unified network fabric, Cisco Data Center VM-FEX virtualization support, Cisco UCS Manager Software, Cisco fabric extender and fabric interconnect architectures, and Cisco Extended Memory Technology. Again, Cisco is innovating across all these technologies. With Cisco UCS architectural advantages, software advances, continuous innovation, and unique blade server and chassis designs, Cisco UCS is the first truly unified data center platform. In addition, Cisco UCS can transform IT departments through policy-based automation and deep integration with familiar systems management and orchestration tools.

Features and Benefits

The Cisco UCS C240 M3 is one of the first rack servers available anywhere with a built-in entry point to unified computing. Table 1 summarizes the features and benefits of the Cisco UCS C240 M3 Rack Server.

Table 1. Features and Benefits

Feature	Benefit
10-Gbps unified network fabric	• Low-latency, lossless, 10-Gbps Ethernet and industry-standard FCoE and native Fibre Channel fabric • Wire-once deployment model in which changing I/O configurations no longer means installing adapters and recabling racks and switches • Fewer interface cards, cables, and upstream network ports to purchase, power, configure, and maintain
Virtualization optimization	• Cisco Data Center VM-FEX and Adapter-FEX technologies, I/O virtualization, and Intel Xeon processor E5-2600 and E5-2600 v2 product family features, extending the network directly to virtual machines • Consistent and scalable operational model • Increased security and efficiency with reduced complexity

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Feature	Benefit
Unified management (when integrated into Cisco Unified Computing System)	• Entire solution managed as a single entity with Cisco UCS Manager, improving operation efficiency and flexibility • Service profiles and templates that implement role- and policy-based management, enabling more effective use of skilled server, network, and storage administrators • Automated provisioning and increased business agility, allowing data center managers to provision applications in minutes rather than days • Capability to move virtual machines and their security features and policies from rack to rack or rack to blade or blade to blade
Intel Xeon processor E5-2600 and E5-2600 v2 product families	• Automated energy efficiency reduces energy costs by automatically putting the processor and memory in the lowest available power state while still delivering the performance required and flexible virtualization technology that optimizes performance for virtualized environments, including processor support for migration and direct I/O • Up to twice the performance for floating-point operations. Intel Advanced Vector Extensions (AVX) provides new instructions that can significantly improve performance for applications that rely on floating-point or vector computations • Cisco C-Series servers keep pace with Intel Xeon processor innovation by offering the latest processors with an increase in processor frequency and improved security and availability features. With the increased performance provided by the Intel Xeon processor E5-2600 and E5-2600 v2 product families, Cisco UCS C-Series servers offer an improved price-to-performance ratio, making Cisco UCS servers among the best values in the industry • Advanced reliability features, including Machine Check Architecture Recovery, automatically monitor, report, and recover from hardware errors to maintain data integrity and keep mission-critical services online • Hardened protection for virtual and cloud Environments: Establish trusted pools of virtual resources with Intel® Trusted Execution Technology (Intel® TXT). Intel TXT ensures that physical servers and hypervisors boot only into cryptographically verified “known good states.” It safeguards your business more effectively by protecting your platform from the insertion of malware during or prior to launch
High-capacity, flexible internal storage	• Up to 12 LFF or 16/24 SFF front-accessible, hot-swappable, SAS, SATA, or SSD drives for local storage, providing redundancy options and ease of serviceability • Balanced performance and capacity to meet application needs: ◦ SATA SSDs ◦ 15,000 RPM SAS drives for highest performance ◦ 10,000 RPM SAS drives for high performance and value ◦ 7200-RPM SATA drives for high capacity and value
RAID 0, 1, 5, 6, 10, 50, and 60 support	A choice of RAID controllers to provide data protection for up to 12 or 24 SAS, SATA, or SSD drives in PCIe and mezzanine card form factors
Cisco UCS C-Series Integrated Management Controller (CIMC)	• Web user interface for server management; remote keyboard, video, and mouse (KVM); virtual media; and administration • Virtual media support for remote CD and DVD drives as if local • Intelligent Platform Management Interface (IPMI) 2.0 support for out-of-band management through third-party enterprise management systems • Command-line interface (CLI) for server management
Fast-memory support	24 DIMM slots supporting up to 1866 MHz of memory for optimal performance
Redundant fans and power supplies	• Dual-redundant fans and power supplies for enterprise-class reliability and uptime • Power efficiency through Cisco Common Form-Factor Platinum Power Supplies (650W or 1200W or 930W DC)
5 PCIe 3.0 slots	• Flexibility, increased performance, and compatibility with industry standards • PCIe 3.0 slots, which are estimated to substantially increase the bandwidth over the previous generation and offer more flexibility while maintaining compatibility with PCIe 2.0 • 2 PCIe generation 3 x16 slots: both full height, and three-quarters length (10.5-in) • 3 PCIe generation 3 x8 slots: 1 full height and three-quarters length, 1 full height and half length, and 1 half height and half length
Integrated quad-port Gigabit Ethernet	• Outstanding network I/O performance and increased network efficiency and flexibility • Increased network availability when configured in failover configurations
Trusted Platform Module (TPM)	• TPM is a chip (microcontroller) that can securely store artifacts used to authenticate the platform (server). These artifacts can include passwords, certificates, or encryption keys • TPM can also be used to store platform measurements that help ensure that the platform remains trustworthy, helping ensure authentication and authorization
Tool-free access	• Enhanced serviceability through tool-free access to all serviceable items and color coded indicators to guide users to hot-pluggable and serviceable items

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Feature	Benefit
Cisco Flexible Flash (FlexFlash)	• The server supports up to two internal Cisco FlexFlash drives (secure digital [SD] cards) • The first SD card is preloaded with 4 virtual drives, which contain the Cisco Server Configuration Utility, the Cisco Host Upgrade Utility, the Cisco C-Series server drivers set, and a blank virtual drive on which you can install an OS or a hypervisor. The second SD card is blank and can be used to mirror the first SD card
GPU Virtualization Support	Offload graphics and compute processing from the C240 M3 server CPU to the NVIDIA Kepler™ enabled GPU and accelerate applications in physical and virtualized environments. For details, refer to NVIDIA Grid K1 and K2 datasheet

Product Specifications

Table 2 lists the specifications for the Cisco UCS C240 M3 server.

Table 2. Product Specifications

Item	Specification
Processors	• 1 or 2 Intel Xeon processor E5-2600 or E5-2600 v2 product families • For a complete list of processor options, please refer to the corresponding SFF SpecSheet or LFF SpecSheet
Memory	• 24 DIMM slots • Support for DDR3 registered DIMMs • Support for DDR3 low-voltage DIMMs • Advanced error-correcting code (ECC) • Mirroring option
PCIe slots	• 5 PCIe generation-3 slots: ◦ 2 PCIe Generation 3, x16 slots: both full height, 3/4 length (10.5-in); ◦ 2 PCIe Generation 3, x8 slots: one full height,1/2 length and one full height 3/4 length; ◦ 1 PCIe Generation 3, x8 slots: 1/2 height and 1/2 length
RAID card	• For a complete list of RAID options, please refer to the corresponding SFF SpecSheet or LFF SpecSheet
Hard drives	Up to 24 front-accessible, hot-swappable, 2.5-inch SAS, SATA or SSD or up to 12 front-accessible, hot-swappable, 3.5-inch SAS, SATA drives
Hard disk options	**2.5-inch SFF drive options:** • For a complete list of drive options, please refer to the corresponding SFF SpecSheet **3.5-inch LFF drive options:** • For a complete list of drive options, please refer to the corresponding LFF SpecSheet
Cisco Flexible Flash (FlexFlash) Internal USB	The server supports up to two internal 16GB Cisco FlexFlash drives (SD cards). One SD card is preloaded with four virtual drives. The four virtual drives contain, respectively, the Cisco Server Configuration Utility, the Cisco Host Upgrade Utility, the Cisco C-Series server drivers set, and a blank virtual drive on which you can install an OS or a hypervisor. The second SD card is blank and can be used to mirror the first SD card.
Internal USB	The server supports one internal USB flash drive
Cisco UCS Integrated Management Controller	• Integrated Emulex Pilot-3 Baseboard Management Controller (BMC) • IPMI 2.0 compliant for management and control • One 10/100/1000 Ethernet out-of-band management interface • CLI and WebGUI management tool for automated, lights-out management • KVM
Front-panel connector	One KVM console connector (supplies 2 USB, 1 VGA, and 1 serial connector)
Front-panel locator LED	Indicator to help direct administrators to specific servers in large data center environments
Additional rear connectors	Additional interfaces including a VGA video port, 2 USB 2.0 ports, 1 Gigabit Ethernet dedicated management port, quad 1 Gigabit Ethernet ports, and an RJ-45 serial port
Physical dimensions (HxWxD)	2RU: 3.4 x 17.5 x 28.0 in. (8.7 x 44.5 x 71.2 cm)
Temperature: Operating	41 to 104° F (5 to 40° C) derate the maximum temperature by 1°C per every 305 m of altitude above sea level
Temperature: Nonoperating	-40 to 158°F (-40 to 70°C)

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Item	Specification
Humidity: Operating	10 to 90% noncondensing
Humidity Nonoperating	5 to 93% noncondensing
Altitude: Operating	0 to 10,000 ft (0 to 3000m); maximum ambient temperature decreases by 1°C per 300m)
Altitude: Nonoperating	40,000 ft (12,000m)

Regulatory Standards

Table 3 lists regulatory standards compliance information.

Table 3. Regulatory Standards Compliance: Safety and EMC

Specification	Description
Safety	• UL 60950-1 No. 21CFR1040 Second Edition • CAN/CSA-C22.2 No. 60950-1 Second Edition • IEC 60950-1 Second Edition • EN 60950-1 Second Edition • IEC 60950-1 Second Edition • AS/NZS 60950-1 • GB4943 2001
EMC: Emissions	• 47CFR Part 15 (CFR 47) Class A • AS/NZS CISPR22 Class A • CISPR2 2 Class A • EN55022 Class A • ICES003 Class A • VCCI Class A • EN61000-3-2 • EN61000-3-3 • KN22 Class A • CNS13438 Class A
EMC: Immunity	• EN55024 • CISPR24 • EN300386 • KN24

Ordering Information

For a complete list of options, please refer to the corresponding SFF SpecSheet or LFF SpecSheet.

Cisco Unified Computing Services

Using a unified view of data center resources, Cisco and our industry-leading partners deliver services that accelerate your transition to a Cisco UCS C-Series Rack Server solution. Cisco Unified Computing Services helps you quickly deploy the servers, optimize ongoing operations to better meet your business needs, and migrate to Cisco's unified computing architecture. For more information, visit http://www.cisco.com/go/unifiedcomputingservices.

For More Information

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Printed in USA C78-700629-07 09/13

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